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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,951	07/12/2005	Hidenori Akita	CML00596JC	8852

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EXAMINER	
CHAN, SAI MING	

ART UNIT	PAPER NUMBER
2616	

NOTIFICATION DATE	DELIVERY MODE
10/02/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing.US@motorola.com

Office Action Summary	Application No.	Applicant(s)	
	10/541,951	AKITA, HIDENORI	
	Examiner	Art Unit	
	Sai-Ming Chan	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 7-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 7-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *6/11/2008* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasotharan et al. (U.S. Patent Publication # 20040120409),** in view of **Geile et al. (U.S. Patent Publication #20020012421).**

Consider **claim 1**, Yasotharan et al. clearly disclose and show an orthogonal frequency division multiplexinq transmitter in (OFDM) communication device, comprising:

a time multiplexor (fig. 1 (30), paragraphs 29-30 (multiplexer));

a synchronization signal generator (fig. 1(200), paragraphs 29-30 (training signal generator)) operatively connected to the time multiplexer (fig. 1 (30), paragraph 0030 (multiplexer)); and

a data supplier (fig. 1 (100), paragraphs 29-30 (OFDM signal generator)) operatively connected to the time multiplexor (fig. 1 (30), paragraph 0030 (multiplexer)),

wherein a preamble signal (paragraph 0030), in the synchronization signal generator, is time-multiplexed in the time multiplexor (fig. 1 (30), paragraph 0029 (multiplexer for combining signals)) with transmit data received from the data supplier (fig. 1 (30), paragraph 0029 (OFDM signals)) to generate an OFDM transmit signal (fig. 1 (30), paragraph 0029 (multiplex for combining OFDM signals and training signal)).

However Yasotharan et al., do not specifically show a zero amplitude reduced preamble signal, which is obtained by passing a specified synchronization preamble through an ideal low-pass filter in the synchronization signal generator to reduce a signal component to near zero amplitude within a time domain.

In the same field of endeavor, Geile et al. clearly show a zero amplitude reduced preamble signal (paragraph 0325 (zero values in unused FFT bin)), which is obtained by passing a specified synchronization preamble (paragraph 0325 (preamble)) through an ideal low-pass filter (paragraph 0325 (zero values in unused FFT bin)) in the synchronization signal generator to reduce a signal component to near zero amplitude within a time domain (paragraph 0325 (zero values in unused FFT bins, resulting in no power being transmitted on that particular frequency)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by Yasotharan, and show a zero amplitude reduced preamble signal, which is obtained by passing a specified synchronization preamble through an ideal low-pass filter in the synchronization signal generator to reduce a signal component to near zero amplitude within a time domain, as taught by Geile, so that symbol synchronization between transmitter and receiver can be done smoothly.

Consider **claim 7**, Yasotharan et al. clearly disclose and show an orthogonal frequency division multiplexing (OFDM). communication device for synchronizing a transmitter and a receiver with a synchronization preamble, comprising:

a receiver having a synchronization timing calculator ((fig. 6 (404), paragraph 0056 (pulse train detector))) for determining a cross correlation between a received signal and a second specified synchronization preamble ((fig.7(412), paragraph 0056 (cross-correlator))), which is patterned the same as the first specified synchronization

preamble counterpart in the transmitter section (paragraph 9 (training signal for symbol synchronization), and calculating a synchronization position (paragraph 0096 (number of samples to skip)), in accordance with the determined cross correlation (paragraph 0056 (cross correlation)).

However Yasotharan et al., do not specifically show a transmitter for obtaining a zero amplitude reduced preamble signal, which is obtained by passing a specified synchronization preamble through an ideal low-pass filter in the synchronization signal generator to reduce a signal component to near zero amplitude within a time domain; and a synchronization position, which is shifted from a peak value position by a specified amount of time.

In the same field of endeavor, Geile et al. clearly show a transmitter (paragraph 0325 (transmitter)) for obtaining a zero amplitude reduced preamble signal (paragraph 0325 (zero values in unused FFT bin)), which is obtained by passing a specified synchronization preamble (paragraph 0325 (preamble)) through an ideal low-pass filter (paragraph 0325 (zero values in unused FFT bin)) in the synchronization signal generator to reduce a signal component to near zero amplitude within a time domain (paragraph 0325 (zero values in unused FFT bins, resulting in no power being transmitted on that particular frequency)); and a synchronization position, which is shifted from a peak value position by a specified amount of time (paragraph 0277 (BPSK (phase-shift) modulation technique is used for synchronization)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by

Yasotharan, and show a zero amplitude reduced preamble signal, which is obtained by passing a specified synchronization preamble through an ideal low-pass filter in the synchronization signal generator to reduce a signal component to near zero amplitude within a time domain and and a synchronization position, which is shifted from a peak value position by a specified amount of time, as taught by Geile, so that symbol synchronization between transmitter and receiver can be done smoothly.

Consider **claim 10**, and **as applied to claim 7 above**, Yasotharan et al., as modified by Geile, clearly disclose and show as described the receiver in the OFDM communication device, wherein the synchronization position is shifted from a peak position (paragraph 0056 (maximum)) of said cross correlation (paragraph 0056 (cross-correlation)) by a specified amount of time (paragraph 0071 (cyclically shifted (time of detection + time of beginning of transmission))).

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasotharan et al. (U.S. Patent Publication # 20040120409),** in view of **Geile et al. (U.S. Patent Publication #20020012421),** and in view of **Wu et al. (U.S. Patent Publication # 6850481).**

Consider **claim 2**, and **as applied to claim 1 above**,

claim 8, and **as applied to claim 7 above**,

Yasotharan et al., clearly disclose and show a transmitter in the OFDM communication device as described.

However, Yasotharan et al. do not specifically disclose the FFT section in the filter.

In the same field of endeavor, Geille et al. clearly show an FFT section for subjecting an input signal to fast Fourier transform (paragraph 0325 (zero values in unused FFT bin)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by Yasotharan, and show a preamble through a low-pass filter, as taught by Geile, in order to make the correlation more efficient.

However, Yasotharan et al. do not specifically disclose zero substitution for output having frequency higher than specified.

In the same field of endeavor, Wu et al. clearly show a zero substitution section for providing zero substitution (column 3, lines 3-8 (a zero value is substituted) for FFT section output components having a frequency higher than specified (column 3, lines 3-8 (noise or frequency higher than specified)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by Yasotharan, and incorporate FFT, as taught by Geile, and display zero substitution, as taught by Wu, so that symbol synchronization between transmitter and receiver can be done smoothly.

Claims 3-4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yasotharan et al. (U.S. Patent Publication # 20040120409),** in view of **Geile et al. (U.S. Patent Publication #20020012421),** and **Wu et al. (U.S. Patent Publication # 6850481),** and further in view of **Klank et al. (U.S. Patent # 6226337).**

Consider **claim 3**, and **as applied to claim 2 above**,

claim 4, and **as applied to claim 1 above**,

claim 9, and **as applied to claim 7 above**,

Yasotharan et al., as modified by Branlund and Kokkonen, clearly disclose and show a transmitter in the OFDM communication device as described.

However, Yasotharan et al. do not specifically disclose a table that stores values obtained when input signals pass through said ideal low-pass filter in accordance with the values of the input signals.

In the same field of endeavor, Klank et al. clearly show a table (column 3, lines 22-29 (stored in the receiver)) that stores values obtained (column 3, lines 22-29 (sequence transformed by FFT)) when input signals pass through said ideal low-pass filter (column 3, lines 22-29 (sequence transformed by FFT)) in accordance with the values of the input signals (column 3, lines 22-29 (sequence)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to demonstrate an OFDM communication device, as taught by Yasotharan, and disclose a table that stores values obtained when input signals pass

through said ideal low-pass filter in accordance with the values of the input signals, as taught by Klank, so that symbol synchronization between transmitter and receiver can be done smoothly.

Response to Amendment

Applicant's arguments filed on June 11, 2008, with respect to claims 1 and 7, on pages 5-8 of the remarks, have been carefully considered.

In the present application, Applicants basically argue, that Yasotharan does not teach or suggest "use a low-pass filter to reduce a signal component to near zero amplitude", "synchronization position is shifted from a peak position by a specified amount of time". The Examiner has modified the response with a new reference which combines with Mashinsky to provide "use a low-pass filter to reduce a signal component to near zero amplitude", "synchronization position is shifted from a peak position by a specified amount of time". See the above rejections of claims 1 and 7, for the relevant interpretation and citations found in Geile, disclosing the missing limitations.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Sai-Ming Chan whose telephone number is (571) 270-1769. The Examiner can normally be reached on Monday-Thursday from 6:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 571-272-4100.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

/Sai-Ming Chan/

Examiner, Art Unit 2616

September 18, 2008

/Brenda Pham/

Primary Examiner, Art Unit 2616